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While in some respects we find sympathy the more complete the nearer home we remain, in another sense there is no true companionship except with the universe." Once more (*Reason in Religion*): "Human life, lying as it does in the midst of a larger process, will surely not be without some congruity with the universe (p. 249)." "Why should we not regard the universe with piety? . . . Where there is such infinite and laborious potency there is room for every hope (p. 191)." But he does not follow out such possibilities, and it may be urged that it is somewhat premature to relegate all objective sanctions to the realm of poetry before such possibilities have been explored.

The older theologians disregarded the material universe as a thing evil and unworthy; the newer theologians, as we saw, adopt it into their theistic systems without any very close examination. They ground their arguments for objective sanctions elsewhere, and fail even to try out the constructive possibilities of materialism.

If it could be shown that there is ground for holding that the structure of the universe—or perhaps better, the structure of *a* universe large enough and detailed enough to correspond to the fields of the sciences—is like the structure of our bodies or our brains or our societies, we might have the benefit of considerations which are now scouted or disregarded. Such a structural resemblance if it could be demonstrated would not show in Fechnerian fashion that the universe has a soul, or a mind, or a consciousness; but it might show that such a soul or mind or consciousness as we manifest in our most significant social movements—that is, in our religions—is a kind of concentrated essence of the world-process, a focusing lens which unites in one image what would otherwise be a flood of imperfectly correlated rays. It is conceivable that thus the natural basis might be shown to have more kinship than Santayana allows with the ideal fulfilment.

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## INTELLIGENCE AND BEHAVIOR

IT is now approximately four years since the appearance of the volume entitled *Creative Intelligence*, in which a group of writers undertook to set forth certain views concerning the nature and implications of intelligence. The doctrine of intelligence embodied in this book has recently been subjected to a keen and discriminating analysis by Professor Lovejoy.<sup>1</sup> The quality of the

<sup>1</sup> This JOURNAL, Vol. XVII., pp. 589-596 and 622-632.

criticism is so unusual in its insight and judicial temper that it can not be passed over in silence. It is easily the most penetrating criticism that has come from a hostile camp since the appearance of the book.

Before attempting to discuss the points raised by Professor Lovejoy, I wish to say that I have no authority to speak for any of my colleagues. Moreover, I have no desire to undertake a defense of the book in question. So far as Professor Lovejoy's discussion of my own essay in that volume is concerned, I am disposed to concede in advance that he has put his finger on a real weakness or worse. My present purpose is rather to contribute something, if I can, to the clarity of the points at issue, and in doing so to emulate his example of hewing to the line and letting the chips fall where they may.

The fundamental contention of Professor Lovejoy's articles, as I read them, may be briefly summarized as follows: The pragmatic doctrine of intelligence, with its emphasis upon the quality of "creativeness" is an assertion of the efficacy of consciousness in the control of behavior. Negatively the doctrine is a rejection of the "self-stultifying idea" that thinking is "a vast irrelevancy, having no part in the causation of man's behavior or in the shaping of his fortunes—a mysterious redundancy in a cosmos which would follow precisely the same course without it."<sup>2</sup> This assertion of efficacy, however, is coupled with a second contention, for which the critic is unable to find sufficient warrant, *viz.*, the denial of interaction between mind and matter. To all appearances, this denial means that the pragmatist, in his iconoclastic zeal, must needs saw off the very branch on which he is sitting. How can mind be efficacious if interaction be excluded? The denial of interaction, so it would seem, is not based on a study of the facts, but springs from a prejudice against the belief in the existence of psychic "entities" or "states" which may become interpolated in the chain of causes and effects. Hence the attempt is made to give an account of intelligent behavior without having recourse to such entities, an account, however, which rests on a confusion, or, as the critic mildly puts it, on an "incomplete analysis." The point of departure is the contention that conscious behavior can be explained in terms of body and environment, without the intervention of a third order of fact as distinct links in the causal chain, to wit mind or psychic state. Intelligence is just a name which designates a peculiar form of control on the part of the environment. Presently, however, it appears that "control by the future" need not involve any explicit reference to the future; but this admission is not seen to carry with

<sup>2</sup> *Ibid.*, p. 632.

it the implication that conscious behavior has been robbed of its distinctive trait. "It is a description of 'intelligence' from which all that makes intelligence 'intelligent' has been expressly excluded as non-essential."<sup>3</sup>

As I have already intimated, Professor Lovejoy's criticism possesses more substance than just plausibility. Before going into details, however, I beg leave to give a brief restatement of the position under discussion, in the hope that a different distribution of emphasis will help to clear up the meaning of the doctrine and thus furnish a more serviceable point of orientation. The central feature of the doctrine is the contention that "consciousness" is identifiable with a certain unique type of control; in other words, that it involves a certain peculiar kind of stimulus. As a simple illustration of such stimulus let us take the hearing of a noise. The noise is, so far forth, just a noise, possessing various properties or qualities that are appropriate subject-matter for the physicist. But in addition to these qualities there is a further trait or quality, which is commonly left out of the reckoning, but which is of vital importance in the present connection. The noise causes the individual concerned to cock his ear, to turn his eyes, perhaps to get up and step to the window in order to ascertain the meaning of the noise. The noise has an indescribable "what-is-it" quality, an "inherent incompleteness," which is as much a part of the noise as heard as is any of its other traits. The limitations of my vocabulary do not permit me to go much beyond lame phrases, of the kind just used, to indicate this unique quality. A still more roundabout phrasing of the matter is that the noise is such as to set on foot activities which are directed towards getting a better stimulus. The listening and the looking are directed towards the end of completing the present incompleteness. So far, I submit the statement, bungling as it is, is just a statement of fact. It is precisely this elusive trait which Professor Mead,<sup>4</sup> if I interpret him correctly, has identified with the psychic and which furnishes the clue to the peculiar type of behavior that is labelled in pragmatic doctrine as consciousness.

The illustrations of this "psychic" element are naturally taken by preference from situations of doubt and uncertainty, in which the "unfinished" character of the stimulus, the "blur" which attention seeks to eliminate, is sufficiently prominent to be recognized and abstracted without difficulty. It is true that on the level of experiences in which adjustments are relatively unimpeded this

<sup>3</sup> *Ibid.*, p. 626.

<sup>4</sup> "The Definition of the Psychical," *Decennial Publications of the University of Chicago*, Vol. III., Part II.

peculiarity of the stimulus is much less in evidence. By hypothesis, however, the conscious stimulus is conditioned throughout upon a conflict of reactions which require continuous adjustment, so that the type of procedure remains the same. If we accept the dictum of psychology that attention is coextensive with consciousness, there is warrant for the view that consciousness has to do with just this curious "incompleteness," by virtue of which the present stimulus makes provision for its own successor. And if we bear in mind that the incompleteness is intrinsic to the stimulus, or inherent in it, we seem to have come upon a trait which constitutes a genuine differentia of the psychic and which makes it possible to draw a sharp line between conscious and mechanical behavior. In so far as a stimulus is of this sort, behavior becomes "forward-looking"; it becomes behavior that is "controlled by the future." The stimulus that is sought is one that will adjust the conflicting reactions; but the process of securing this stimulus is always to some extent a matter of discovery, of trial and error, the empirical filling-in of an antecedent framework or outline.

From this standpoint it is clear that the status of the "psychic" in the scheme of things is different from that which is assigned to it in traditional doctrine. The psychic becomes a distinguishable aspect, but not a separate link, in the chain of causation. What we find here is, to all appearances, a concomitant and simultaneous development of stimulus and response, which calls for a category different from that of ordinary cause and effect as based on temporal sequences. The relation of stimulus and response is rather analogous to the relation of gravitation among physical bodies, or to the relation of the two poles in a magnetic field. For this reason the position under discussion undertakes to combine the assertion that intelligence is efficacious for conduct with the denial of interactionism. Behavior is conscious or intelligent, not because there are psychic links that get themselves inserted in the series of events, but because the process as a whole presents a specifiable differentiating trait.

The point at issue here can perhaps be given more substance and outline in connection with Lovejoy's comments on Dewey's charge that representationism violates the "continuity of nature" and is based, in the last analysis, upon "supernaturalism." In Lovejoy's view this charge is more relevant to Dewey's own position. Representationism is, at worst, a minor offender, since "after all, mere representationism is a function which, though external to the system dealt with by the physical sciences, does not disturb that system, or limit the applicability of the laws of those sciences." This is more than can be said for Dewey's doctrine, for "the control of 'things'

by a unique, non-mechanistic process of 'intelligence'—nay, the creation of new content of reality, the introduction into the physical order of genuine novelties, by man's reflection and contrivance—this is not a mere external addition to, but an interjection of a foreign element into, the system of nature known to physical science."<sup>5</sup>

This reply, as it seems to me, misses the point of the original criticism, which is directed towards the status of the mental or psychic. If I may venture to interpret Professor Dewey's meaning, his insistence on continuity is not in the least intended to rule out the possibility of new agencies or forms of activity. On the contrary, his aim is precisely to accord them proper recognition and to make provision for the advent of novelty, wherever it may occur. Nature is genuinely creative, not simply at the moment when consciousness arises, but all along the line. The product of hydrogen and oxygen is something that is wet; the chick, when hatched, exhibits a multitude of attributes or qualities that were not to be found in the egg. In all these cases we are in the presence of facts that are not reducible to their antecedents. The wetness that results from the combination of oxygen and hydrogen is undeniably a novel trait, yet it is continuous with the antecedent situation from which it emerges, in the sense that it occurs as the result of an orderly process of change taking place in this situation. In the case of representationism, however, if I read Professor Dewey's meaning aright, no room is left for any such change. The objects concerned necessarily remain wholly indifferent, so as to protect the integrity of knowledge, and the change is located elsewhere, *viz.*, in a hypothetical "mind" or "consciousness." The accusation of "supernaturalism" does not have reference to the advent of novelty as such, but to the belief in a novelty which is so "external to the system dealt with by the physical sciences" that all the king's horses and all the king's men are unable to put the *dissecta membra* together again. As against such discontinuity Professor Dewey's plea for continuity is pertinent and deserving of serious consideration.

This elaboration will perhaps serve to explain, at least in part, why instrumentalism is so reluctant to bring in mental states or psychic existences in accounting for conscious behavior. Its concern being with this distinctive character of the stimulus and the corresponding type of behavior, it can not afford to give countenance to entities or existences the chief purpose of which, so far as I can make out, is just to translate this distinctive character into mechanical equivalents. Traditional theory has always started with the assumption that physical objects are necessarily characterized by stark

<sup>5</sup> This JOURNAL, Vol. XVII., p. 623.

rigidity and close-clipped edges, so that their mutations naturally fall within narrow boundaries. This restriction inevitably created the temptation to assume that consciousness must either be reducible, in materialistic fashion, to a mode of motion, or else be recognized as a totally different kind of entity, after the manner of dualism. The result has been the creation of an elaborate psychological stock-in-trade, consisting likewise of hard, finished products; so that, instead of gaining insight into the distinctive quality of conscious behavior we merely fell heir to the dreary problem of the relation of mind and body. The offense of concealing the true nature of the facts was not mitigated, but merely glossed over, by the insistence that psychology is concerned with mental *processes* and not with static entities, for the reason that this refinement had no relevancy to the peculiar and essential quality of the process involved in conscious behavior. Until this quality is recognized and emphasized, we are without a significant clue; when it is properly evaluated, the emphasis shifts inevitably from mental states in the traditional sense to this peculiar type of control as exercised by *objects*. As Professor Lovejoy rightly suggests, the principal quarrel of pragmatism should be with "mechanistic naturalism." My point just now is that we do not get off the plane of mechanistic naturalism in our dealings with the facts of experience unless we give a new interpretation to conscious behavior.

As was intimated earlier, however, Professor Lovejoy's criticism is, in part, well taken. The illustration of the razor to which he refers at some length is undoubtedly incorrect and misleading. The statement, indeed, that the perception of the razor as sharp is conditioned by the reinstatement of an antecedent reaction to a cut is presumably correct. But, as Lovejoy points out, the import of all this is simply (a) that the response is, in fact, adaptive, and (b) that the present response is the effect of a previous response in a similar situation. To put it differently, the response is "anticipatory" only in a metaphorical sense, *i.e.*, from the standpoint of a bystander, and so provides no distinguishing trait for its classification as conscious behavior. The justice of this criticism must be admitted. It is possible to go still further and argue that even if we assume an anticipation of an injury, we still have not reached an explanation of conscious behavior. Whether the quality "sharp" be perceived directly or be present as something that is indicated, *i.e.*, 'present as absent,' we still are concerned with objects, sensuous or conceptual, and not with behavior. To cite another passage from the essay in which the razor illustration occurs: "A quality such as 'sharp' or 'hot' is not mental or constituted by consciousness, but the function of the quality in giving direction to behavior is consciousness."<sup>6</sup> This function

<sup>6</sup> *Creative Intelligence*, p. 256.

of the quality is precisely what the illustration leaves out of account.<sup>7</sup> The reaction to "sharp" figures in conscious behavior, not simply because it is a present reaction to a future injury, but because this reaction, through conflict with other reactions, gives to the stimulus the "unfinished" or "incomplete" character previously discussed and so induces the search for a better stimulus. It is this search which is "forward-looking" or "controlled by the future"; and, so far as I am able to see, it possesses this trait independently of any explicit reference to the future. The illustration in question fails to distinguish between "anticipation" which is either metaphorical or conceptual in character and "anticipation" as descriptive of the "unfinished" stimulus, and so far justifies the strictures which Professor Lovejoy passes upon it.

If we keep our eye upon this unique character of the stimulus, we get perhaps an indication of the direction in which we must go for an answer to Professor Lovejoy's question as to the conditions that determine the development of a conscious situation. "By virtue of what property or relation does one possible bit of content get attended to, taken account of, perhaps taken up into the organized plan itself, while other bits are ignored or eventually excluded?"<sup>8</sup> It requires no argument, I take it, to show that the stimulus of the given moment necessarily varies with the situation, since no two instances of reaction are precisely alike. It follows, therefore, that the "better" stimulus which is demanded in order to harmonize the conflicting reactions will likewise vary. In the razor illustration, for example, if the reaction to "sharp" is to be harmonized with a conflicting reaction of reaching and grasping, the solution lies in picking it up so as not to cut the fingers; if the conflicting reactions are those connected with an effort to break a rope or string, the razor offers itself as a suitable tool; if the perception of the razor occurs as an intrusion upon some other process to which it is irrelevant, the adjustment is perhaps best achieved by permitting the object to drop from view. I have no desire, of course, to give an appearance of simplicity to processes which are, as a matter of fact, discouragingly complex, but neither am I able to convince myself that the endless gradations and colorings of what James calls the fringe are insufficient, in principle, to account for the entire range of conscious behavior.

If this interpretation of conscious behavior be conceded, we may hope that other seeming difficulties will shrink to smaller dimensions

<sup>7</sup> This function of experienced qualities or objects is described more at length in the essay, pp. 246-250.

<sup>8</sup> This JOURNAL, Vol. XVII., p. 629.



on closer approach. We need not, for example, take serious exception to Lovejoy's contention that concepts are "mental entities," in the sense that they may be "actually given at any moment in any context of experience, but can not be regarded as forming a part, at the same moment, of the complex of masses and forces, in a single, 'public' space, which constitutes the world of physical science."<sup>9</sup> That concepts exist in some form and that there is a discernible difference between them and physical objects is an indubitable fact. The important issue is not whether concepts exist, but whether the classification of concepts as "mental" is to be made to accord with the foregoing theory of conscious behavior. If construed in the spirit of instrumentalism, concepts are essentially substitutes for sensuous objects; in Dewey's language, they are "tools" or objects occupying the peculiar status of being merely suggested objects. So far as conscious behavior is concerned, they function in much the same way as physical objects, in that they likewise present this distinctive "incompleteness" by virtue of which they control behavior in such fashion as to make it a quest for a more adequate stimulus. There is no ground for Lovejoy's contention that if concepts are admitted to their legitimate place, "it follows that, rightly construed and consistently thought through, pragmatism means interactionism."<sup>10</sup> Unless we abandon the category of interactionism we are back on the level of mechanistic naturalism, from which the position of instrumentalism is intended to provide a means of escape.

I trust it has been made clear why I can not regard philosophy as under the obligation to furnish "a more serious and thorough examination of the psychophysical problem than it has yet given us."<sup>11</sup> The problem itself looks suspicious. If mind is the sort of thing it has been supposed to be in the past, then indeed there is no escape from the mind-body problem and the weary manipulation of categories such as interaction and parallelism. But if this is not the case, it may well be that the road of progress, to adapt a saying of James, does not lead through the psychophysical problem at all, but around it. At all events, it is worth while to put the suggestion to a serious test.

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<sup>9</sup> *Ibid.*, p. 629.

<sup>10</sup> *Ibid.*, p. 629.

<sup>11</sup> *Ibid.*, p. 632.